

# Summary of the Federal Highway Administration's (FHWA) Introduction to Scenario Planning Webinar

## Introduction to Scenario Planning Webinar

September 29, 2010

1:00 – 2:30 PM (EST)

These notes provide a summary of the PowerPoint presentation discussed during the webinar and the question and answer session that followed the presentation.

A recording of the webinar is available at [fhwa.na3.acrobat.com/p14208710/](http://fhwa.na3.acrobat.com/p14208710/) or from the contacts listed below. Please note that background typing noise is audible during some portions of the webinar.

The recording and PowerPoint slides are also available upon request from Fred Bowers at [Frederick.Bowers@dot.gov](mailto:Frederick.Bowers@dot.gov), Rae Keasler at [Rae.Keasler@dot.gov](mailto:Rae.Keasler@dot.gov), or Alisa Fine at [Alisa.Fine@dot.gov](mailto:Alisa.Fine@dot.gov).

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## Presenters

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## Participants

Approximately 100 participants attended the webinar.

## Introduction to Webinar

*Ken Petty and Jim Cheatham*

Mr. Petty thanked participants for joining the webinar and described its goals: 1) to provide an overview of transportation scenario planning; 2) to share the experience of an agency that implemented scenario planning; and 3) to gauge interest in additional scenario planning training opportunities. Depending on the level of interest in the introductory webinar, FHWA might sponsor additional webinars on scenario planning topics in the future.

Mr. Cheatham welcomed participants to the webinar and explained that FHWA supports scenario planning as an enhancement of the traditional transportation planning process. The technique can help agencies and stakeholders:

- Compare choices and consequences to make better decisions;
- Identify driving forces of change; and
- Better understand relationships between transportation networks and social, environmental, and economic factors that affect communities or regions.

Overall, scenario planning enables transportation agencies, communities, and regions to make more informed decisions in the present and adjust and strategize to meet tomorrow's needs.

FHWA established the scenario planning program in 2004 as part of an initiative associated with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The SAFETEA-LU initiative sought to promote innovative approaches to improve the quality of statewide and metropolitan transportation plans and programs.

As part of its scenario planning program, FHWA:

- Shares resources, case studies, and information through the FHWA scenario planning website at [www.fhwa.dot.gov/planning/scenplan/index.htm](http://www.fhwa.dot.gov/planning/scenplan/index.htm).
- Provides guidance and assistance to agencies using scenario planning through workshops, webinars, case study reports, and the FHWA scenario planning website. Over the past six years, FHWA has sponsored 18 scenario planning workshops in 17 states.
- Completed the FHWA [Scenario Planning Guidebook](#), which provides a suggested framework for how agencies can implement a complete scenario planning process.
- Completed a report with the help of the University of Utah on Integrated Transportation Scenario Planning in the 21<sup>st</sup> Century.
- Is now identifying the next generation of scenario planning efforts that address emerging issues such as climate change and technological innovations.
- Is now adding an online application to the website for agencies to request training opportunities, such as peer exchanges. The application will be completed in fall 2010.

## Overview of Scenario Planning

*Fred Bowers*

### **What is Scenario Planning?**

Mr. Bowers explained that scenario planning is a technique that helps assess and prepare for possible future conditions using multiple plausible stories about the future. Through

analysis of these alternative futures, scenario planning can help transportation agencies make more informed decisions about how to plan for the future.

A major benefit of scenario planning is the ability to involve a wide range of stakeholders, including the public, to build a common understanding of future possibilities and choose a preferred path. It is a flexible technique that can be adapted for many purposes, scales, and issues. Workshops that share peer examples of scenario planning are the core of the FHWA Scenario Planning Program, as they foster both face-to-face interaction and innovative thinking.

### ***Scenario Planning History***

Scenario planning was initially used in private industry as a way to understand risk and support strategic business planning. The application of scenario planning to address transportation and land use issues emerged over time, with early efforts beginning in the 1960s. Over time, use of scenario planning for transportation has become much more common and there are now hundreds of examples from across the country.

In the 1990s and 2000s, many transportation scenario planning efforts were motivated by concern over the rate of land consumption and a desire to bring attention to transportation, land use, and quality of life issues related to accelerating land consumption.

In recent years, scenario planning has been used to bring attention to many additional issues that are related to transportation decision-making, such as climate change, energy conservation, public finance, and technological advances. For example, the Southern California Association of Governments (SCAG) is now using scenario planning to assess levels of greenhouse gas (GHG) emissions that might result from different development alternatives. From this analysis, SCAG plans to assess what strategies might help to address a statewide GHG emission reduction target.

## **Integrating Climate Change Into Scenario Planning**

*Diane Turchetta*

Ms. Turchetta noted that FHWA is now planning five workshops that will focus on integrating climate change into scenario planning. The workshops will address both adaptation and mitigation considerations. Three metropolitan planning organizations (MPOs) and two state Departments of Transportation (DOTs) have been selected to host the workshops, which will occur in October and November 2010.

In addition, FHWA is sponsoring the Cape Cod Pilot Project, which will establish a replicable process for integrating climate change mitigation and adaptation measures into a transportation and land use planning strategy.

## **Scenario Planning Components**

*Alisa Fine*

### ***Defining Features***

Ms. Fine described the defining features of scenario planning. By showing how different land use patterns might impact transportation networks, the process allows better integration of transportation and land use planning. Through comparing scenarios, stakeholders can weigh

in on the long-term consequences of decision-making and trade-offs involved. Finally, stakeholders are actively engaged in creating and assessing scenarios; visualization techniques are often used to engage stakeholders in these processes. Additionally, scenario planning can involve either quantitative or qualitative analysis and can be used in both fast- and slow-growing regions.

Scenario planning share common features with alternatives analysis and visioning. However, scenario planning differs from both in considering land use as a variable rather than a static input, considering interactions between multiple factors, and emphasizing participation of public stakeholders.

Transportation agencies using scenario planning have typically focused their efforts on the relationships between transportation and development patterns, often as part of the long-range planning process. However, some more recent efforts, which FHWA has identified as next generation scenario planning, go beyond these typical areas of focus to explore broader risks and impacts that might be associated with less predictable or controllable factors.

### ***Scenario Planning Guidebook***

The FHWA *Scenario Planning Guidebook* is now available online. The guidebook provides a basic, suggested framework for scenario planning. It does not prescribe specific steps, as FHWA recognizes that each process is unique. The guidebook details six key phases that agencies are likely to encounter when implementing scenario planning and provides details on the various questions and considerations that might be involved. The framework describes potential outputs that could result from each of the phases and shares examples to illustrate each phase.

## **Scenario Planning in Practice**

*Brian Betlyon*

Mr. Betlyon elaborated on each phase of the six-phase scenario planning framework (described in more detail in the FHWA *Scenario Planning Guidebook*) and provided examples demonstrating how transportation agencies have addressed each phase.

### ***Phase 1: How should we get started?***

Phase 1 is the opening point in scenario planning. The first steps are to think about whether scenario planning would be a good approach for addressing land use planning, transportation system improvements, and the future of the community or region. During Phase 1, it is also appropriate to think about partnering opportunities. The output of Phase 1 could be a work scope or tasks that can be included in the Unified Planning Work Program. Agencies should be sure to allow enough time for scenario planning; some efforts can take one to two years.

Mr. Betlyon then presented Salt Lake City's Wasatch Choices as an example for Phase 1. Wasatch Choices was a scenario planning effort to update the region's 2040 long-range transportation plan. The effort began by considering prime interactions and feedback loops that affected Salt Lake City's future. The Wasatch Front MPO then partnered with the Mountainlands MPO to develop a comprehensive effort.

### ***Phase 2: Where are we now?***

Phase 2 involves evaluating existing conditions and trends. Agencies may review existing data inventories and consider whether to undertake additional data collection efforts.

The Binghamton Metropolitan Transportation Study (BMTS) conducted a scenario planning effort for its long-range transportation plan, called "Placemaking for Prosperity." This effort compiled data quantifying the region's economic decline. The BMTS found that the county economic development plan was a useful resource that could provide existing data.

### ***Phase 3: Who are we and where do we want to go?***

In Phase 3, agencies and stakeholders identify important community values and assets, or factors, resources, or components that the community hopes to preserve or change in the future. The BMTS scenario planning effort is a good example of Phase 3. During its scenario planning effort, BMTS took stock of regional components that stakeholders wanted to preserve, such as the area's distinctive architecture and history of entrepreneurial successes.

In California, the San Luis Obispo Council of Governments (SLOCOG) conducted a scenario planning effort called "Community 2050," which offers another example of Phase 3. As part of Community 2005, SLOCOG used interactive polling and "dot" games to determine community values and identify where community members wanted growth to occur.

### ***Phase 4: What could the future look like?***

During Phase 4, several "what if" scenarios are developed that represent a variety of ways that driving forces could impact transportation and land use in the future.

The Delaware Valley Regional Planning Commission (DVRPC) illustrates Phase 4. DVRPC developed 12 scenarios representing a wide range of possibilities, such as accelerating sprawl, urban center repopulation, rising energy costs, rapid regional growth, tightened homeland security, increasing global trade, increasing information technology, and out-migration. After qualitatively assessing these scenarios, DVRPC selected a subset of five scenarios for refined, quantitative analysis. These five scenarios were selected to represent what would be best for the region, worst for the region, and most likely to happen. In this way, the five scenarios helped DVRPC showcase the range of possibilities for the future.

The Salt Lake City's Wasatch Choices 2040 effort used combinations of common themes that emerged in public workshops to shape scenarios. The themes were:

- Emphasis on growth centers;
- Desire for land recycling;
- Variety of housing options; and
- Emphasis on bicycle and pedestrian routes.

### ***Phase 5: What impacts will scenarios have?***

During Phase 5, a variety of measures and indicators are used to compare scenarios and possibly identify a preferred scenario. There are many software tools that can be used to track how changes in land use affect various indicators. Three examples include CommunityViz, INDEX, and Place3s. Many tools use a geographic information system (GIS) platform.

### ***Phase 6: How will we reach our desired future?***

Phase 6 focuses on implementing the actions and preferences identified in the scenario alternatives or preferred scenario. In some cases, as in the Wasatch Front 2040 effort, a vision map illustrating the preferred scenario can be developed. It might also be helpful to

summarize the benefits of implementing the preferred scenario. For example, staff involved in the Wasatch Front 2040 effort found that the preferred scenario would result in 18 percent less congestion, 12 percent more transit use, and 23 fewer square miles of land consumption than the trend scenario.

Finally, it is important to think carefully about the organizations and individuals that will have responsibility for implementing the plan. Creating a realistic action plan is a very important part of a successful scenario planning exercise.

## **Scenario Planning in Practice: Peer Experience**

*Peter Keating*

### **Background**

Mr. Keating noted that Vermont has only 600,000 residents. Chittenden County is the population and jobs center of the state and has about 150,000 residents. The City of Burlington is the urban center of the state, with approximately 40,000 residents. Most recent growth has been in Burlington suburbs. Outlying areas are quite rural. Chittenden County is the only MPO in Vermont.

### **Motivation for using scenario planning**

Mr. Keating then described the scenario planning process conducted by the Chittenden County MPO (CCMPO). CCMPO is currently using scenario planning as part of a 50-year planning study. Previous metropolitan transportation plan update efforts in 1997 and 2005 used a similar alternatives analysis approach that included alternatives for land use patterns and transportation investments.

One of the major differences between earlier and current CCMPO scenario planning efforts is that public stakeholders are now involved in developing alternative scenarios, while previously CCMPO staff developed the alternatives.

Both the CCMPO's board and local elected officials supported using a scenario planning approach; in part, this support was due to lessons learned from a FHWA workshop that CCMPO hosted in 2007. In addition, CCMPO wanted to take a 50-year view on the region's future. Scenario planning offered a good tool for taking this long-term perspective.

### **Necessary components of scenario planning**

When conducting a scenario planning process, it is important to:

- Involve people who have a thorough knowledge of the region's economy, history, geography, and other issues.
- Obtain data on jobs, housing, and population.
- Develop or obtain forecasts about growth or decline and areas that are likely to develop.
- Develop or obtain analytical tools, like the travel demand model and/or GIS capabilities.
- Ensure the agency has sufficient staff and/or consultant resources, although scenario planning does not necessarily require more time or funding than a typical planning effort.
- Develop performance measures; these are the heart of scenario evaluation. CCMPO found that quantitative measures calculated as outputs of the travel demand model and GIS applications helped its board and the public evaluate scenarios in terms of the metropolitan transportation plan's goals and objectives. CCMPO's performance

measures, to be used in their upcoming scenario survey, include land consumption, mode share, GHG emissions, and congestion.

CCMPO's first scenario planning process did not explore global or national issues, such as transportation funding, fuel technology, or climate change. CCMPO will be assessing climate change scenarios as part of its upcoming climate action plan.

### ***Public involvement***

Three public workshops were the main component of CCMPO's public involvement plan for the effort. The goal of the workshops was to encourage participants to create alternative future scenarios. CCMPO also engaged the public through its website, email lists, newspapers, an online survey, and through uses of scenario visualizations. CCMPO attempted to reach a diverse range of stakeholders in the workshop phase, with local government officials and highly informed citizens most represented.

Each of the three public workshops began with a background primer on development patterns in the region. For example, CCMPO staff used graphics and data to show that large lot single family development has accounted for the vast majority of land consumption over the last 20 years.

Participants were then split into small groups and were asked to discuss their values and guiding principles related to issues such as congestion, transportation choices, land preservation, community character, energy/climate, and other issues. Next, each group was provided a base map and a set of chips representing the amount of new development expected to occur over the next 50 years. Different chips represented different types and densities of development.

Groups assigned development to the base map using their chips; participants could also trade lower density chips for higher density chips. The workshops resulted in 12 separate maps of how and where stakeholder groups believed the region should grow.

### ***Scenarios developed***

CCMPO staff reviewed the 12 maps created at the workshops. All were fairly similar. Each map involved higher density development than the recent trend and clustered development in strategic locations throughout the region. Staff analyzed the transportation impacts of these scenarios and found that they were nearly identical. Based on this finding, CCMPO staff chose one representative example, called the Workshop Scenario, to analyze and evaluate in detail.

In addition to the Workshop Scenario, CCMPO staff developed a Trend Scenario and Core Scenario. The Core Scenario allocated 50 percent of all growth to Burlington. Overall, the three scenarios provided three clearly contrasting development possibilities for the region.

### ***Lessons learned***

Mr. Keating then described several lessons learned from the CCMPO's scenario planning efforts:

- Simplify the analytical results so that people can easily understand them and are not overwhelmed by their number or complexity.
- Provide clear instructions to participants during scenario workshops:
  - Emphasize that redevelopment can be an option when stakeholders are allocating development in different alternatives.

- Reiterate that development should be based on the group's values and guiding principles.
  - Provide adequate time to consider transportation elements.
- Ensure consistency in personnel (e.g., staff, board members, consultants) throughout the duration of the scenario planning effort.
- Remember that the process can take more time than anticipated.
- Learn from others; sharing lessons learned can be very helpful.
- Remember that scenario planning can successfully engage the public; the technique helps agencies talk to residents about the larger regional community instead of just about transportation.
- Keep in mind that scenario planning is only part of a larger process. It may not lead to good or consistent recommendations if the rest of the planning process is not as strong.
- Carefully assess whether the analytic model used to analyze scenarios is sensitive enough to evaluate land use changes.

## Summary of Questions and Discussion<sup>1</sup>

### **1. What techniques and principles were used to develop different scenarios in the CCMPO effort?**

Peter Keating: The Workshop Scenario came directly from public participation. The other scenarios were developed by staff because we needed some variation. The Core Scenario ran counter to the observed land use planning that we had seen, but we wanted to assess what the impacts would be for comparison. We compared all of the scenarios based on congestion, mode choice, GHG emissions, and other factors.

### **2. What kind of environmental performance metrics were used to evaluate the scenarios in the CCMPO effort? Was the percentage of impervious surfaces, number of impaired streams, and/or degree of forest or wetland loss used?**

Peter Keating: We did not get into these issues at all as our model was not capable of assessing them. The only environmental measure we used was GHG emissions. Also, we wanted to use only a small number of performance measures so that the public could more easily understand the results of the analysis.

### **3. Did each group develop the same scenarios in the CCMPO effort?**

Peter Keating: No. Participants in the workshops came up with 12 maps that were essentially variations on a theme. We used one representative example. The transportation performance of that one was nearly identical to the other workshop maps.

### **4. Did you have pictures correlating to the development densities in the CCMPO effort?**

Peter Keating: Yes. We have pictures, ground-level photos, orthophotos, and other images.

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<sup>1</sup> To facilitate readability, the questions and answers presented here are summaries and are not direct transcriptions of what occurred during the actual webinar proceedings. In addition, the order of questions has been modified from the proceedings.



**5. Is the CCMPO scenario process ongoing? How often does it occur and how is it updated?**

Peter Keating: In 2005, CCMPO used a similar alternatives analysis approach. Our current schedule is to adopt the long-range transportation plan by summer 2011. We will probably take one year off before we decide whether to use a scenario planning process again.

**6. How were fiscal constraint issues incorporated into CCMPO's scenario analysis?**

Peter Keating: CCMPO has not incorporated fiscal constraint yet, but eventually, all proposed transportation projects and strategies will need to relate back to expected financial resources. This can be a challenging process.

**7. Scenario planning with significant land use planning efforts can require extensive resources to complete modeling, analysis, public participation, and ensure adoption by the local agencies. How can MPOs fund a scenario planning exercise?**

Brian Betlyon: Many MPOs use metropolitan planning (PL) funds; some use safety funds. In some cases, states have provided MPOs a portion of their state planning and research (SPR) funding to support scenario planning. Phase 1 is a good time to think about the need for scenario planning resources, including modeling and software needs, or public involvement and consulting services.

**8. Does FHWA have any sense of how many (or how few) MPOs around the country have done a scenario planning exercise and actually arrived at a preferred land use and transportation scenario? What are the next steps that MPOs have taken after arriving at that preferred scenario, especially in terms of linking it to a constrained long-range transportation plan process?**

Brian Betlyon: FHWA does not have a specific number of how many MPOs around the country have engaged in scenario planning. However, based on the past workshops, we could estimate that about half of the MPOs we have worked with have gone through a full scenario planning exercise. Most MPOs do arrive at a preferred scenario but it is typically a hybrid between multiple alternatives.

Implementation is challenging. Experience shows that the preferred scenario can be reflected in long-range transportation plan goals and objectives. Allocation of future growth assumed for the plan can also be based on the preferred scenario.

**9. How can scenario planning be used at the state level?**

Brian Betlyon: A good example is the Idaho DOT. This agency used scenario planning approach to update the statewide transportation plan. Please contact Brian Betlyon for more information on this effort. Corridor planning studies might also be an appropriate use of statewide-scale scenario planning.

**10. Are there any examples of agencies that have used social media as part of scenario planning outreach or other techniques that can reach younger people?**

Peter Keating: CCMPO did not use social media. We tried to get a range of representation by using a variety of venues; for example, we used a high school cafeteria as a venue for one of the workshops. Some sectors of the population are difficult to engage. Younger people were a very difficult population segment to involve in CCMPO's effort.

Ken Petty: FHWA is now working on a public involvement techniques guidebook that includes social media use and current technologies. Please contact Ken Petty for additional information on that guidebook.

## Closing Information

To conclude the webinar, Mr. Petty reviewed the key points of the webinar and provided resources and contact information for additional information on scenario planning:

- FHWA scenario planning website: [www.fhwa.dot.gov/Planning/scenplan/index.htm](http://www.fhwa.dot.gov/Planning/scenplan/index.htm)
- Program contacts:
  - Fred Bowers: 202-366-2374 or [Frederick.Bowers@dot.gov](mailto:Frederick.Bowers@dot.gov)
  - Rae Keasler: 202-366-0329 or [Rae.Keasler@dot.gov](mailto:Rae.Keasler@dot.gov)
  - Brian Betlyon: 410-962-0086 or [Brian.Betlyon@dot.gov](mailto:Brian.Betlyon@dot.gov)
  - Jim Thorne: 708-283-3538 or [Jim.Thorne@dot.gov](mailto:Jim.Thorne@dot.gov)
  - Alisa Fine: 617-494-2310 or [Alisa.Fine@dot.gov](mailto:Alisa.Fine@dot.gov)

## Participant Polling

<b>Q 1: Who do you work for?</b>		
	Number Responding	Percent Responding
Federal Government	18	33%
State Government	7	13%
Metropolitan Planning Organization	19	35%
Regional Planning Organization	2	4%
National Association	0	0%
Private Sector	3	6%
Academia	2	4%
Other	3	6%

<b>Q 2: What is your experience with scenario planning?</b>		
	Number Responding	Percent Responding
No experience	13	22%
I have heard about it, but do not have firsthand experience	25	42%
I have participated in scenario planning exercises	19	32%
I have led a scenario planning exercise	2	3%

<b>Q 3: How many people are participating with you in the room?</b>		
	Number Responding	Percent Responding
1 person	35	63%
2-5 people	19	34%
6-10 people	2	4%
More than 10	0	0%

<b>Q 4: To learn more about scenario planning, would you be interested in attending:</b>		
	Number Responding	Percent Responding
Additional webinars	22	45%
Workshop	23	47%
Focus Groups	3	6%
Others	1	2%

<b>Q 5: What scenario planning topic(s) would you be interested in learning more about?</b>		
	Number Responding	Percent Responding
Action planning	11	20%
Analysis tools	30	55%
Climate change considerations in scenario planning	32	58%
Data gathering tools and techniques	18	33%
FHWA <i>Scenario Planning Guidebook</i>	15	27%

Framing scenarios for new trends/factors	14	25%
Incorporating fiscal constraint into scenario planning	28	51%
Integrating scenario planning into long-range planning	28	51%
Micro-scale scenario planning	8	15%
Using scenario planning to promote livability and sustainability	24	44%
Use of visualization techniques	30	55%

<b>Q 6: Was the information presented relevant and useful?</b>		
	Number Responding	Percent Responding
Very useful	24	56%
Somewhat useful	18	42%
Not very useful	1	2%
Not useful	0	0%

<b>Q 7: What aspects of the webinar were most useful?</b>		
	Number Responding	Percent Responding
Scenario planning introduction, overview, guidebook	14	35%
Applications, tools, and examples	18	45%
Chittenden County MPO presentation	27	68%
Discussion/Q&A	4	10%